

AMENDMENTS TO THE CLAIMS

Pursuant to 37 CFR §121(c), the claim listing, including the text of the claims, will serve to replace all prior versions of the claims in the application.

Please amend claims 3, 7, 9 and 10, as follows:

Listing of Claims:

1 1. (Previously Presented) A distributed router, comprising:
2 a plurality of line connection units;
3 a main processor disposed to construct and manage a routing table, to receive changes of
4 routing information from adjacent routers, update the routing table, and to broadcast changes of
5 routing information received through internal InterProcessor Communication paths within the
6 distributed router;
7 a switching unit coupled to switch transmission of packets between the line connection
8 units and the main processor;
9 a plurality of forwarding tables positioned in different corresponding ones of the plurality
10 of line connection units, to copy, store and manage parts of the routing table; and
11 a plurality of forwarding processors positioned in different corresponding ones of the
12 plurality of line connection units, to receive the changes of routing information broadcast by the
13 main processor through the internal InterProcessor Communication paths of the distributed
14 router, to update different corresponding ones of the forwarding tables, to ascertain an output
15 direction of a packet received from an external router by looking-up forwarding information in

16 corresponding ones of the forwarding tables for the packet received from the external router, and
17 transmitting the packet to the output direction ascertained, to determine whether an output
18 direction of a packet received from the switching unit is toward an external router or toward the
19 switching unit by looking-up the forwarding information in the corresponding forwarding table
20 for the packet, to transmit the packet to the external router when the determined output direction
21 of the packet is toward the external router, and to discard the packet when the determined output
22 direction of transmission of the packet is toward the switching unit.

1 2. (Previously Presented) The distributed router of claim 1, wherein the main processor
2 comprises:

3 a plurality of input/output interfaces handling packets transmitted and received to and
4 from the switching unit;

5 a switch interface buffering packets transmitted and received via the input/output
6 interfaces, and interfacing with the switching unit; and

7 a routing table lookup and management unit receiving packets from the input/output
8 interfaces through the switch interface, and transmitting packets received to the input/output
9 interfaces in conformance with routing information stored in the routing table, and receiving the
10 changes of routing information from external routers, updating the routing information with the
11 changes of routing information, and transmitting updated routing information to the forwarding
12 processors through the internal InterProcessor Communication paths of the distributed router.

1 3. (Currently Amended) The distributed router of claim 1, wherein each of the
2 forwarding processors comprises:

3 an Internet Protocol packet receiving unit for extracting an IP header field from each
4 incoming packet;

5 an IP header analyzing unit extracting an IP address required for lookup control from
6 each IP header received from the Internet Protocol packet receiving unit;

7 a lookup table storing address indices for the forwarding tables where information on
8 each packet is stored;

9 a lookup control unit latching the address of the forwarding table intended for reference
10 from the lookup table using the IP address extracted by the IP header analyzing unit, reading
11 forwarding information from the forwarding table, [[and]] when a packet is received from the
12 switching unit and an output direction of the packet is toward an external router, making a
13 determination to transmit the packet to the external router, [[and]] when a packet is received
14 from the switching unit and the output direction of the packet is toward the switching unit,
15 making an determination to discard the packet, and when a packet is received from an external
16 router, transmitting the packet to an output address associated with the packet;

17 an IP header changing unit changing information of the IP header of each packet based
18 on the forwarding information obtained by the lookup control unit; and

19 an IP packet transmitting unit transmitting the stored packets according to the changes in
20 information for the header of each packet to the external router.

1 4. (Previously Presented) A distributed router, comprising:

2 a plurality of line connection units;

3 a plurality of main processors positioned in corresponding different ones of the plurality
4 of line connection units, to construct and manage a routing table, receive changes in routing
5 information from adjacent routers, update the routing table, and broadcast changes of routing
6 information through IPC paths of the distributed router;

7 a switching unit switching packets received from the line connection units to
8 corresponding ones of the line connection units to which these packets are transmitted;

9 a plurality of forwarding tables positioned in corresponding different ones of the plurality
10 of line connection units, to copy, store and manage parts of the routing table; and

11 a plurality of forwarding processors positioned in corresponding different ones of the
12 plurality of line connection units, to ascertain an output direction of a packet received from an
13 external router by making a lookup in a corresponding one of the forwarding tables and transmit
14 the packet received to the output direction ascertained, to determine whether an output direction
15 of a packet received from the switching unit is toward an external router or the switching unit by
16 making a search of forwarding information stored in the corresponding one of the forwarding
17 tables for the packet, transmit the packet to the external router when the output direction is
18 toward the external router, and discard the packet when the output direction is toward the
19 switching unit, and update the forward table in response to reception of changes in routing
20 information broadcast by the main processor through the internal IPC paths of the distributed
21 router.

1 5. (Previously Presented) A ping-pong preventing method using a distributed router,
2 comprising:

3 a step 1 in the distributed router having a switch unit connecting a main processor and a
4 plurality of line connection units, of the main processor updating a routing table, and transmitting
5 changes of routing information to respective line connection units through internal paths of the
6 distributed router, when the main processor receives changes of routing information from an
7 adjacent router;

8 a step 2 of a forwarding processor positioned in each of the line connection units
9 updating a forwarding table in response to reception of the changes of routing information
10 broadcast from the main processor through the internal paths of the distributed router; and

11 a step 3 of the forwarding processor receiving a packet from one of an external router and
12 the switching unit, ascertaining input and output directions of the packet, transmitting the packet
13 received from an external router to the switching unit, discarding the packet received from the
14 switching unit when the output direction of the packet is toward the switching unit, and
15 transmitting the packet received from the switching unit when the output direction of the packet
16 is not toward the switching unit.

1 6. (Original) The method of claim 5, wherein step 1 of updating the routing table,
2 comprises:

3 a step 1-1 with the main processor updating the routing table when the main processor
4 receives the changes of routing information;

5 a step 1-2 with the main processor adjusting changes in a routing path to fit the
6 forwarding table of each of the line connection units; and

7 a step 1-3 with the main processor transmitting the changes of the routing information to
8 the respective line connection units through the internal paths of the distributed router.

1 7. (Currently Amended) The method of claim 5, wherein step 3 of the forwarding
2 processor ascertaining input and output ports, comprises:

3 a step 3-1 with the forwarding processor ascertaining the output [[port]] direction of the
4 packet received from an external router by searching the forwarding table and transmitting the
5 packet according to the output port ascertained;

6 a step 3-2 with the forwarding processor ascertaining the output direction of the packet
7 received from the switching unit by searching the forwarding table, and transmitting the packet
8 when the output direction is toward an external router; and

9 a step 3-3 with the forwarding processor ascertaining the output direction of the packet
10 received from the switching unit by searching the forwarding table, and discarding the packet
11 when the output direction is toward the switching unit.

1 8. (Previously Presented) The method of claim 5, wherein the forwarding processor
2 receiving a packet from one of an external router and the switching unit, and ascertaining input
3 and output directions of the packet in step 3 comprises:

4 a step of the forwarding processor extracting an IP header from an incoming IP packet;

5 a step of the forwarding processor extracting an IP address for lookup control from the IP
6 header; and

7 a step of the forwarding processor ascertaining the output direction by using the IP
8 address to make a search of forwarding table using the IP address.

1 9. (Currently Amended) A router with a distributed architecture, comprised of:

2 a main processor updating routing information stored in a routing table and broadcasting
3 changes in said routing information;

4 a plurality of line connection units;

5 a switching unit directing transmission of packets between said main processor and said
6 line connection units;

7 each of said line connection units comprising:

8 a forwarding table storing a copy of parts of said routing table, and

9 a forwarding processor making a discontinuance of transmission of any packet
10 received by a corresponding one of said line connection units from said switching unit
11 and designated by a destination address to be subsequently forwarded to said switching
12 unit, transmitting any packet received from said switching unit to a destination address

13 associated with the packet if the destination address does not correspond to said
14 switching unit, and transmitting any packet received from an external router to a
15 destination address associated with the packet.

1 10. (Currently Amended) The router of claim 9, with said forwarding processor
2 comprised of:

3 when the packet has been received from said switching unit and said destination address
4 of the packet indicates that an output direction of the packet is toward an external router,
5 transmitting the packet to the external router, [[and]]

6 when the packet has been received from said switching unit and said destination address
7 of the packet indicates that an output direction of the packet is toward said switching unit,
8 making said discontinuance, and

9 when the packet has been received from an external router, transmitting the packet to a
10 destination address associated with the packet.